

CLAIMS

1. (currently amended) A magnesium based die-casting alloy having high strength creep resistance and high tensile yield strength at elevated temperatures of at least up to 175°C consisting essentially of:

- i) at least 85.4 Wt% Mg,
- ii) 4.7 to 7.3 wt% aluminum,
- iii) 0.17 to 0.60 wt% manganese,
- iv) 0.0 to 0.8 wt% zinc,
- v) 1.8 to 3.2 wt% calcium,
- vi) 0.3 to 2.2 wt% tin, and
- vii) 0.0 to 0.5 wt% strontium

and having minor amounts of other elements with each additional other element not exceeding 0.03 wt%.

2. (original) An alloy according to claim 1, comprising up to 0.0004 wt% iron, up to 0.001 wt% nickel, up to 0.003 wt% copper, or up to 0.03 wt% silicon.

3-5. (Previously cancelled)

6. (cancelled)

7-20 (Previously cancelled)

21. (previously presented) An alloy according to claim 1, comprising up to 0.001 wt% beryllium.

22. (previously presented) An alloy according to claim 2, comprising up to 0.001 wt% beryllium.

23. (previously presented) An alloy according to claim 1, further comprising incidental impurities.

24. (previously presented) An alloy according to claim 1, which contains 5.9 to 7.2 wt% aluminum, 0.9 to 2.1 wt% tin, 2.1 to 3.1 wt% calcium, and 0.2 to 0.35 wt% manganese.

25. (previously presented) An alloy according to claim 2, which contains 5.9 to 7.2 wt% aluminum, 0.9 to 2.1 wt% tin, 2.1 to 3.1 wt% calcium, and 0.2 to 0.35 wt% manganese.

26. (previously presented) An alloy according to claim 21, which contains 5.9 to 7.2 wt% aluminum, 0.9 to 2.1 wt% tin, 2.1 to 3.1 wt% calcium, and 0.2 to 0.35 wt% manganese.

27. (cancel)

28. (cancel)

29. (previously presented) An alloy according to claim 1 exhibiting a marked response to aging at 250°C, wherein tensile yield strength, compressive yield strength, and creep resistance increase.

30. (previously presented) An alloy according to claim 1 which is beryllium free.

31. (previously presented) An alloy according to claim 1, which exhibits tensile yield strength at ambient temperature higher than 170 Mpa and tensile yield strength at 175°C higher than 150 Mpa.

32. (previously presented) An alloy according to claim 1, which exhibits minimum creep rate (MCR) less than 1.7×10^{-9} /s at 150°C under stress of 100 Mpa.

33. (previously presented) An alloy according to claim 1, which exhibits minimum creep rate less than 4.9×10^{-9} /s at 200°C under stress of 55 Mpa.

34. (previously presented) An alloy according to claim 1, which exhibits improvements of its strength in course of temperature aging at 250°C for 1 hour.

35. (previously presented) An article which is a casting of a magnesium alloy of claim 1.

36. (previously presented) An article of claim 35, wherein the casting is chosen from the group consisting of high-pressure die-casting, sand casting, permanent mold casting, squeeze casting, semi-solid casting, thixocasting and thixomolding.

37. (previously presented) An article according to claim 35 which exhibits tensile yield strength at ambient temperature higher than 170 Mpa and tensile yield strength at 175°C higher than 150 Mpa.

38. (previously presented) An article according to claim 35 which exhibits minimum creep rate (MCR) less than 1.7×10^{-9} /s at 150°C under stress of 100 Mpa.

39. (previously presented) An article according to claim 35 which exhibits minimum creep rate less than 4.9×10^{-9} /s at 200°C under stress of 55 Mpa.

40. (previously presented) An article according to claim 35 which was subjected to temperature aging at 250°C for 1 hour.

41. (New) An alloy according to claim 1, comprising in its structure grains of Mg-Al solid solution or Mg-Al-Sn solid solution, and an intermetallic compound chosen from Al_2Ca , $\text{Al}_2(\text{Ca}, \text{Sr})$, Al_xMn_y , $\text{Al}_2(\text{Ca}, \text{Sn})$ and $\text{Al}_2(\text{Ca}, \text{Sn}, \text{Sr})$,

wherein said intermetallic compounds are located at grain boundaries of said Mg-Al solid solution or Mg-Al-Sn solid solution.

42. (New) An alloy according to claim 1 having tensile yield strength (TYS) higher than 140 Mpa at 200°C.

43. (New) An alloy according to claim 1 having compressive yield strength (CYS) higher than 140 Mpa at 200°C.